

# E-SOVE

the 21<sup>st</sup> conference 2018



**Arthropod Vector Science  
for the benefit of society:  
Educate, Empathize, Engage**

22<sup>nd</sup> - 26<sup>th</sup> October 2018  
Palermo, Italy



# Assessment of the boosted SIT approach using pyriproxyfen on tsetse in laboratory conditions

L. Laroche<sup>1,3</sup>, S. Ravel<sup>1</sup>, T. Baldet<sup>2</sup>, R. Lancelot<sup>2</sup>, F. Chandre<sup>3</sup>, M. Rossignol<sup>3</sup>, V. Le Goff<sup>3</sup>, J-F. Fafet<sup>4</sup>, A.G. Parker<sup>5</sup>, J. Bouyer<sup>1,2,5</sup>

<sup>1</sup> Intertryp, IRD, Cirad, Univ Montpellier, France

<sup>2</sup> ASTRE, Cirad, INRA, Univ Montpellier, Montpellier, France

<sup>3</sup> MIVEGEC, IRD, CNRS, Univ Montpellier, Montpellier, France

<sup>4</sup> 3F Innovation, Responsable Recherche et Développement, Saint-Amarin, France

<sup>5</sup> Insect Pest Control Laboratory, Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture, IAEA, Vienna, Austria

Tsetse flies (*Glossina*), are African hematophagous Diptera, main vectors of animal and human trypanosomoses in Africa. The Sterile Insect Technique (SIT), has been successful to control tsetse when conducted on isolated populations. A new approach, called boosted SIT (BSIT), combining SIT with the contamination of wild females by sterile males coated with pyriproxyfen (PP) has been proposed for large-scale control of vector populations. The aim of the study was to determine in laboratory conditions the transfer dynamics of PP from a sterile male to a female during mating, as well as the impact of PP on female fecundity. To do this, we developed a method of treating sterile males by impregnating them with a powder containing 40 % of PP. The results showed that the PP had no impact on the survival of sterile males. With respect to persistence, PP persisted on sterile males up to 10 days at a dose of 100 ng. In addition, we showed a horizontal transfer of PP from a sterile male treated to a female. During mating, females received an average of 50 ng PP and by simple contact without mating more than 10 ng PP. Ongoing experiments will verify the impact of the transferred PP on female fecundity. These initial results must be confirmed under field conditions. Eventually, the large-scale application of the BSIT approach against tsetse flies could be implemented in Africa.

**Keywords:** *Glossina palpalis gambiensis*, tsetse control, boosted SIT, pyriproxyfen, survival, persistence, transfer, fecundity.

*This study was carried out and financed within the framework of the REVOLINC project (ERC Consolidator grant no. 682387)*